

ATOMIZER FOR PRODUCTION OF VERY FINE DROPLET THROUGH CENTRIFUGAL ATOMIZATION TECHNIQUE AND METHODS

IITM Technology Available for Licensing

Problem Statement

- Existing centrifugal atomization techniques struggle to produce fine droplets at lower spinning rates (rpm).
- Prior disc designs, including edge angles and shapes, have not effectively optimized droplet size reduction.
- There has been **limited exploration of altering flow patterns on the disc** to improve atomization efficiency and droplet uniformity.

Intellectual Property

- IITM IDF Ref. **1565**
- IN 499001 - Patent Granted**

Technology

Innovative Disc Design:

The atomizer features a slotted disc with parallel grooves, enhancing the production of uniform, very fine droplets through centrifugal atomization.

Efficient Droplet Formation:

The design improves droplet size control and reduces power consumption by enabling fine droplet formation at lower rotational speeds.

Optimized Performance: The slotted disc design offers a significant improvement over traditional plain discs by ensuring a narrow size distribution of droplets, enhancing process efficiency and product quality.

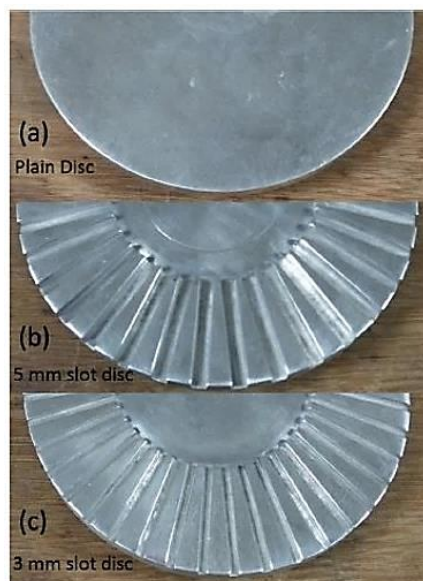


FIG. 1. (a) shows the top view of a plain disc known in the prior art. (b) is showing the disc of an embodiment with 5 mm slot. (c) shows the disc of an embodiment with 3 mm slot.

Technology Category/ Market

Category - Advanced Atomization, Advance Material & Manufacturing

Applications - Powder Metallurgy, Additive Manufacturing, Spray Coating
Industry - Powder Production and Processing, Additive Manufacturing

Market - Powder Metallurgy Market size is expected to reach USD 26.10 billion by 2029, growing at a CAGR of 4.6% during 2024 - 2029.

TRL (Technology Readiness Level)

TRL - 5: Technology validated in relevant environment.

Research Lab

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Key Features / Value Proposition

• The slotted disc design ensures consistent and precise droplet sizes, improving product quality and application precision.

1. Enhanced Droplet Uniformity



• The technology enables fine droplet production at lower spinning speeds, leading to energy savings and cost efficiency.

2. Reduced Power Consumption:



• The parallel slots in the disc enhance atomization, reducing the need for higher rotational speeds and minimizing mechanical stress.

3. Improved Process Efficiency



• Ideal for diverse industries including 3D printing, spray coating, and powder production due to its ability to produce fine and uniform droplets.

4. Versatile Application



• The slotted disc design reduces manufacturing complexity and cost by optimizing the atomization process and improving material utilization.

5. Cost-Effective Manufacturing



• The atomizer's innovative design integrates seamlessly with existing centrifugal atomization systems, offering a modern solution to traditional droplet production challenges.

6. Advanced Technology Integration



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